

In Response

Mechanistic Ontology and Contextualistic Epistemology: A Contradiction Within Behavior Analysis

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Hayne Reese (1993) suggests that the ontology of behavior analysis is mechanistic, but that its epistemology is contextualistic. We agree with this description or, more specifically, we agree that the verbal behavior of the majority of behavior analysts is consistent with these views. Herein lies a problem, however. Professing a mechanistic ontology and a contextualistic epistemology appears to represent a contradiction in terms. We will examine the nature of this contradiction and consider how it might be resolved.

Ontology

Reese (1993) suggests that ontology refers to fundamental, “faith-like,” or untestable assumptions about reality. For instance, most behavior analysts assume that there exists a real, physical, and ordered universe. Consider, for example, the following quotation from Skinner (1953):

When we have discovered the laws which govern a part of the world about us, and we have organized these laws into a system, we are then ready to deal effectively with that part of the world. (p. 14)

Here, Skinner clearly suggests that the world exists in parts “about us” (i.e., in-

dependently of us) and that these parts are governed by laws that we can discover and use. The idea that we discover the laws governing independently existing bits of the universe is patently mechanistic. In the words of Morris (1993):

In mechanism . . . the goal of the scientist is to discover the laws of how the world works—laws that are presumed to be extant things and relations independent of the scientist. (p. 35)

Epistemology

Epistemology, according to Reese (1993), refers to assumptions about knowledge. For example, behavior analysts “know” the universe by (a) dividing it into *codefining* interactions between stimulus–response classes, (b) analyzing the behavior of the scientist (as part of the known universe) as yet more codefining stimulus–response classes, and (c) establishing the existence (or truth) of these classes on the basis of successful working (i.e., prediction and control). The following quotation categorizes these three constituents of behavior-analytic “knowing” as contextualistic:

Behavior analysis is based on a pervasive use of a particular explanatory model: the “act in context.” In behavior analysis, any event is to be understood and even defined through a contextual analysis. The three-term contingency of radical behaviorism is a dynamic spatio-temporal contextual unit—none of the terms can be defined independently of any of the others. Radical behaviorism is so thorough-going in its attempt to analyze context that even the behavior of scientists as they conduct contextual analyses is to be understood through more contextual analyses (Skinner, 1945) . . . the underlying “truth criterion” of contextualism is “successful working” or pragmatism (Pepper, 1942). A term, concept, or statement of a relation is not true or false simply according to public agreement about the correspondence between it and other events, but

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according to the impact that the use of the term, concept, or statement has on dealing successfully with the phenomena of interest. Radical behaviorism clearly encompasses such a view (e.g., Skinner, 1945). (S. Hayes & Brownstein, 1986, p. 177)

The Contradiction

The contradiction between our mechanistic ontology and our contextualistic epistemology can be seen readily by comparing Skinner's (1953) quotation (see above, under Ontology) with the following;

Scientific laws . . . specify or imply responses and consequences. They are not . . . obeyed by nature but by men who deal effectively with nature. The formula $s = \frac{1}{2}gt^2$ does not govern the behavior of falling bodies, it governs those who correctly predict the position of falling bodies at given times. (Skinner, 1969, p. 141)

On the one hand, Skinner argues that we must discover "the laws which govern . . . the world about us," and on the other he suggests that "scientific laws . . . are not obeyed by nature but by men who deal effectively with nature." Let us examine more closely this contradiction.

If we accept that all behavior, including the behavior of the scientist and philosopher (Skinner, 1945), consists of interactions between codefining stimulus and response classes that exist only insofar as they help achieve specific goals, how can we then argue that there exists a *real, physical* universe, possessing *real* properties or laws of which responses are a reflection (Reese, 1993, p. 71). In other words, if we talk of a *real, physical* universe, we are saying that stimuli have some form of existence beyond our behavior; this clearly contradicts behavior-analytic epistemology, in which there can be no stimuli (i.e., a physical universe) if there is no organism to provide responses that define those stimuli (see Zuriff, 1985, pp. 273–275). It appears, then, that when we speak ontologically we are willing to accept stimuli as having a known existence independent from responses, but when we speak epistemologically we treat stimuli and responses as codefining.

One of the problems in resolving this contradiction is that ontological assumptions cannot be *directly* tested. However, as Reese (1993) points out, such as-

sumptions are abandoned if they do not prove to be useful for the science in question. Insofar as the current ontology of behavior analysis contradicts its epistemology (or vice versa), and given that such a contradiction may be seen by others as conceptual confusion within behavior analysis, perhaps we should carefully examine the relation between our ontology and our epistemology.

RESOLVING THE CONTRADICTION

Materialistic Objective Idealism

Perhaps the simplest solution would be to embrace a form of materialistic objective idealism (Reese, personal communication), in which we maintain our mechanistic ontology and contextualistic epistemology. In effect, we could assume that stimuli are in fact independent of behavior, and even though we can have knowledge of stimuli only through behavior, our responses allow us to make inferences about the *real* nature of independently existing stimuli. However, in adopting this solution, we create yet another contradiction. If we assume that *direct* access to reality is impossible, then we have no objective reality with which we can establish the truth of our inferences; thus, it is contradictory to argue that our inferences are, in truth, inferences about an external reality (see L. Hayes, 1993, p. 37). This further contradiction may also be viewed as conceptual confusion within behavior analysis. Some may be willing to accept this risk for certain pragmatic reasons (e.g., we are more likely to be taken seriously by the modern, Western verbal community if we believe in an independent reality, even if sometimes we talk as if we do not). Nevertheless, given that there is a risk involved in accepting this contradiction, it may be wise to explore alternatives to this position.

A Mechanistic Epistemology

Another solution might be to fully embrace a mechanistic epistemology that will be consistent with our ontology. In

fact, a number of behavior analysts have suggested that we should develop a mechanistic approach. For example, Staddon (1993, pp. 247–248) has recently argued that (a) there is a real, physical world, and we can “know” or understand it as it really is (i.e., by implication, stimuli and responses can exist independently); (b) observed events operate independently of scientific observers; and (c) we should use “internal states” as intervening variables. Although adopting this, or perhaps some other form of mechanistic approach (Shull & Lawrence, 1993, p. 241; see also Marr, 1993), would rid us of a contradiction, it may then become increasingly difficult to discriminate behavior analysis from mechanistic stimulus–response learning theories. In so doing, we run the risk of deemphasizing control as a scientific goal, and perhaps sliding down “the slippery slope of non-manipulable causes” (S. Hayes & Brownstein, 1986). Some researchers may be willing to accept this risk, but others may not. Insofar as there is a risk involved in adopting a mechanistic epistemology, perhaps we should explore yet further alternatives.

Not a Contradiction But a Paradox

Another alternative would be to argue that the combination of a mechanistic ontology and a contextualistic epistemology constitutes a paradox rather than a contradiction (Reese, personal communication). A contradiction can be established only by direct comparison, but ontology and epistemology are different domains; therefore, direct comparison between them is a “category mistake” (see Ryle, 1949). The combination is a paradox in the original Greek sense—“contrary to expectation”—because in other approaches, ontology is consistent with epistemology (e.g., in the stimulus–response learning theory tradition, both are mechanistic; for Piagetian cognitivists, both are organic; and for Marxist psychologists and most European “action theorists,” both are contextualistic). The paradox in behavior analysis is resolved by noting that the worldviews are not

really mixed because mechanism is restricted to ontology and contextualism is restricted to epistemology, and the mechanistic ontology is epistemologically justified by the successful working criterion of truth used in contextualistic epistemology. In other words, to remain true to the successful working criterion of truth, one must talk of an external reality to predict and control, but to remain true to the root metaphor of the act in context, one must also accept that there is no external reality to predict and control.

Although the paradox approach may allow us to avoid the contradiction, it could be argued that this solution actually transforms a mechanistic ontology into a contextualistic ontology. In other words, if we justify a mechanistic ontology by appealing to the contextualistic truth criterion of successful working, this implies that any talk of an external reality is purely pragmatic, and does not, in fact, refer to an extant reality at all. Whether we should treat this as a further paradox or a contradiction is beyond the scope of this paper. In any event, the paradox approach may also be viewed as conceptual confusion within behavior analysis. Again, some may be willing to accept this risk for pragmatic reasons, but one further alternative presents itself.

A Contextualistic Ontology

Another way in which we might resolve the contradiction or paradox would be to take seriously the full implications of our contextualistic epistemology. In effect, we could fully recognize that stimuli and responses are fundamentally inseparable, and that this view seriously undermines our currently mechanistic ontology. Of course, this position then invites us to adopt a contextualistic ontology in which the fundamental nature of the universe (or reality) exists as a behavioral event, rather than as an independent reality. Indeed, does it *really* make any sense to talk about the fundamental nature of the universe as a non-behavioral event (i.e., as an independent reality)? It appears not, because as soon as you talk about the universe as a non-

behavioral event, it *becomes* a behavioral event. In other words, *the universe can only ever exist in behavior*.

Interestingly, a similar conclusion has also been drawn in the domain of modern physics. For example, in the words of Zukav (1979):

Since particle-like behavior and wave-like behavior are the only properties that we ascribe to light, and since these properties now are recognised to belong (if complementarity is correct) not to light itself, but to our interaction with light, then it appears that light has no properties independent of us! To say that something has no properties is the same as saying that it does not exist. The next step in this logic is inescapable. Without us, light does not exist. . . . This remarkable conclusion is only half the story. The other half is that, in a similar manner, without light, or, by implication, anything else to interact with, we do not exist! . . . Properties belong to interactions, not to independently existing things like "light." This is the way that [Niels] Bohr solved the wave-particle duality of light. And the philosophical implications of complementarity became even more pronounced with the discovery that the wave-particle duality is a characteristic of *everything*. (p. 118)

Even in physics then, a number of prominent researchers have concluded that it makes little sense to talk of an ontological reality that exists independently of the observer. It is important to recognize, however, that this stance does not reintroduce Humean skepticism or subjective idealism. In the former case, reality is ascribed indirectly to an unknowable physical universe (and thus we cannot talk about it) and in the latter to the mentalistic realm of human ideas. In contrast, the contextualistic ontology suggested here views reality as the *interaction* between the observer and the observed. Reality is neither a physical universe nor a mental realm. Reality is a behavioral interaction—it is neither the stimulus nor the response, but their codefining interaction.

Although many behavior analysts may be uncomfortable with this form of contextualistic ontology, it does represent at least one way in which we may avoid the possible damage incurred from a contradiction (or a troublesome paradox) without abandoning our contextualistic epistemology. In effect, although we as

behavior analysts may sometimes talk, for pragmatic reasons, *as if* there is an independent reality, we are consistent because we always acknowledge that this talk does *not* "refer" to an independent reality but to other scientific talk (i.e., to other behavioral interactions) (see L. Hayes, 1993). Finally, it is important to recognize that this form of contextualistic ontology is no more "true" or "final" than any other alternative. The truth of contextualistic ontology within behavior analysis will always depend upon the consequences arising from its use. In effect, contextualistic ontology is itself a behavioral interaction. Beyond this we can say no more.

REFERENCES

- Hayes, L. J. (1993). Reality and truth. In S. C. Hayes, L. J. Hayes, H. W. Reese, & T. R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 35–44). Reno, NV: Context Press.
- Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations, and a behavior-analytic view of the purposes of science. *The Behavior Analyst*, 9, 175–190.
- Marr, M. J. (1993). Contextualistic mechanism or mechanistic contextualism?: The straw machine as tar baby. *The Behavior Analyst*, 16, 59–65.
- Morris, E. K. (1993). Behavior analysis and mechanism. *The Behavior Analyst*, 16, 25–43.
- Pepper, S. C. (1942). *World hypotheses: A study in evidence*. Berkeley: University of California Press.
- Reese, H. W. (1993). Comments about Morris's paper. *The Behavior Analyst*, 16, 67–74.
- Ryle, G. (1949). *The concept of mind*. London: Hutchinson.
- Shull, R. L., & Lawrence, P. S. (1993). Is contextualism productive? *The Behavior Analyst*, 16, 241–243.
- Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*, 52, 276–281.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Free Press.
- Skinner, B. F. (1969). *Contingencies of reinforcement: A theoretical analysis*. New York: Appleton-Century-Crofts.
- Staddon, J. E. R. (1993). Pepper with a pinch of psalt. *The Behavior Analyst*, 16, 245–250.
- Zukav, G. (1979). *The dancing Wu Li masters: An overview of the new physics*. London: Rider/Hutchinson.
- Zuriff, G. E. (1985). *Behaviorism: A conceptual reconstruction*. New York: Columbia University Press.